

ITR/Peer Review Plan
Mill Creek Watershed Feasibility Study
Nashville, TN

Introduction

Located in one of the most rapidly urbanizing areas of Middle Tennessee, the 108-square mile Mill Creek Watershed drains about 13% of Nashville, Davidson County and 6% of Williamson County. About two thirds of the watershed is within Davidson County, one third in Williamson County. The Metropolitan Government of Nashville and Davidson County (Metro Nashville) is the study sponsor. Williamson County declined to participate in the study which thusly focuses on the downstream 2/3s of the basin within Davidson County. The study evaluates both water quantity and water quality issues as defined by flood damage and aquatic ecosystem issues. The Feasibility Cost Sharing Agreement was signed in April 2003.

A major goal of the study has been to evaluate the impacts of urbanization on water quantity and quality and to develop GIS-based management tools that Metro Nashville can use to manage growth. An extensive effort went into developing gridded, GIS-referenced models that are capable of simulating both event-based and continuous flow. The HEC-GeoHMS software was used to create the GIS basis for the modeling. HEC-HMS software was used for both the event and continuous simulations. The event-based computations provide results of a specific flood event, such as the 1% flood. The HEC-HMS continuous simulation provides the capability of capturing seasonal variation in flow. It simulates long periods (not just flood events) and accounts for seasonal variations in moisture. The model includes an evapotranspiration component that is computed from observed atmospheric data including temperature, sunshine duration, and humidity. It accounts for both the direct runoff and base flow (groundwater) components of the hydrograph. The continuous simulation modeling has shown that development will cause tributaries to Mill Creek to run dry more frequently.. It shows that the major problem for the aquatic ecosystem will be lack of water. This is in addition to the other impacts of urbanization such as sedimentation and habitat alteration. Lack of water will impact the federally listed endangered Nashville Crayfish (*Orconectes shoupi*), which occurs only in Mill Creek and its tributaries.

Flood damages total about \$3.5 million annually. A standard suite of FDR alternatives is being pursued. Floodplain evacuation, bridge and channel modifications and a dry dam have survived the initial screening. Ecosystem alternatives include riparian plantings, wetland creation, rain gardens, stream bank protection and in stream habitat structures. Greenways/parks will also be included along with both purposes. While Metro Nashville has stated that they will not buy land for ecosystem restoration alone, there is a considerable amount of existing public land in the watershed and along Mill Creek and its major tributary Sevenmile Creek. Our ecosystem alternatives are limited to existing publicly-owned land and land acquired for FDA and combination purposes. The total project cost will be in the neighborhood of \$20 million or less. This is a small GI study with a study cost of about \$2.2 million.

a. Study Title: Mill Creek, Nashville, TN Watershed Feasibility Study: Flood Damage Reduction and Ecosystem Restoration

Key PDT members

Name	Discipline	Experience
Sue Ferguson	PM/Formulation	27 yrs/LRD technical expert in ER Plan Formulation
Barry Moran	H&H Subject Matter Expert	13 yrs
Kim Franklin	Biologist	7 yrs
Phillip Jones	Economist	19 yrs
Emily Carr	Soils Engineering	24 yrs
Mike Abernathy	Real Estate	16 yrs
Cullum Miller	Cost Engineering	2 yrs
Barney Schulte	Structural	16 yrs
Adam Walker	Structural	5 yrs

District POC

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b. **External Peer Review** has begun on the ecosystem restoration portion of this study through a technical working group with representatives from state, federal and local agencies. The event analysis is a standard analysis that has been done in multiple studies. The continuous flow analyses are based on methods that while new to HMS have been available for quite some time. Therefore both the District and HEC believe that external peer review is not needed on the modeling. ITR should be sufficient. The criteria for “influential scientific information or assessment” have not been met.

c. A technical working group has and will be used to review critical decisions during this study. These include the without project condition, alternative evaluation, and draft report. Public comments will be disseminated to the advisory group.

d. A technical group has participated in the development of goals and objectives for the Mill Creek Study. State agencies included the TN Department of Environment and Conservation (TDEC), TN Department of Agriculture (TDA includes the non-point source group), TN Wildlife Resources Agency (TWRA) and TN Department of Natural Heritage. Federal agencies included USFWS, USGS, USDA and NRCS. Metro Nashville, Vanderbilt University, TN Scenic Rivers and the Cumberland River Compact also participated. A smaller group including USFWS, NRCS, TWRA, TDEC and Metro Nashville has reviewed the application of habitat sustainability units to the without project condition. Both groups will continue to meet and participate in the alternative evaluation, refinement, plan selection and draft report. External Peer Review of the flood damage reduction aspects of this study is not anticipated.

e. A public meeting has been held to discuss goals and objectives. Additional meetings will be held as the study progresses. Topics will include alternative screening, selection

of plans to be studied in detail and recommended plan selection. A public meeting will be held during public review of the draft report.

f. Significant relevant comments will be provided to the technical group during the study and review process.

g. We anticipate a minimum of 5 of the technical working group to fully participate in the review.

h. Reviewers should include both biologists and stormwater engineers.

i. To date reviewers have been invited by the Corps and local sponsor.

j. The neither the public, nor professional societies have been asked for nominations.

ITR

An ITR team including key members from out side the district had been selected and ITR of specific areas of the without project condition has been done.

Key ITR members are listed below.

Name	Discipline	District	Experience
Jane Ruhl	FDR Plan Formulation	LRL	LRD Technical Expert
Pete Dodgion	ER Plan Formulation	LRH	LRD Technical Expert
Dennis Giba	Economist	LRC	29 yrs
Ben Rohrbach	H&H	LRN	12 yrs

Other technical members will be assigned as the study progresses to include a reviewer for each technical element represented on the PDT. The without project condition H&H is underway and the economics review has already been done by the Ben Rohrbach and Dennis Giba respectively. Dennis Giba has over 29 years as a flood damage reduction economist with the Chicago District and has worked on numerous high profile and complicated projects for Chicago and Louisville Districts. He is now retired, but is available by contract. Our plan is to continue with their participation. Biographies of Jane Ruhl and Pete Dodgion are attached. All ITR will be conducted using Dr. Checks.

Individual members of the ITR team shall review technical products as they are completed, submitting comments to the PDT, receiving responses from the PDT and resolving and certifying individual products, including the without project condition, feasibility scoping package, alternative formulation briefing package and draft feasibility report.